



35 Highland Circle  
Needham, MA 02494  
phone (781) 449- 4312  
fax (781) 449-7623  
[www.ricciconsultants.com](http://www.ricciconsultants.com)

December 20, 2010

Peabody Retirement Board  
City Hall  
24 Lowell Street  
Peabody, MA 01960-5440

Dear Board Members:

We are pleased to present the enclosed report summarizing the results of our actuarial valuation of the Peabody Contributory Retirement System as of January 1, 2010.

Our valuation was performed in accordance with the provisions contained in Chapter 32 of the Massachusetts General Laws, "M.G.L.", as of January 1, 2010 and GASB Statement No. 25, Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans (GASB 25) and GASB Statement No. 27, Accounting for Pensions by State and Local Governmental Employers (GASB 27).

The principal results of our valuation are summarized in Section I. The summary of Plan provisions and actuarial methods and assumptions are shown in Sections VII and VIII, respectively. Section IX summarizes the demographic profile of active members and retired plan participants. Asset information and actuarial liabilities are presented in Sections II and III, respectively. The development of the required appropriations pursuant to Chapter 32 of the M.G.L. is shown in Section IV. The required disclosures under GASB 25 and GASB 27 are presented in Section V.

We also provide a 30-year forecast of the required appropriations and cash flows in Exhibits G and H of Section IV.

Our actuarial valuation is based on a discount rate of 8.25%, compounded annually. Our calculations were based on participant census data and other information provided by the Peabody Contributory Retirement System and the benefit provisions of Chapter 32 of the M.G.L. as of January 1, 2010.

Our valuation follows generally accepted actuarial methods and we perform such tests as we consider necessary to assure the accuracy of the results. The amounts presented in this report have been appropriately determined according to the actuarial assumptions and methods stated herein.

Peabody Retirement Board

December 20, 2010

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We appreciate this opportunity to be of service to the Peabody Retirement Board. We are available to answer any questions with respect to our valuation.

Respectfully submitted,



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Linda L. Bournival, FSA  
Member, American Academy of Actuaries  
781-444-7121



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Stephen J. Ricci, ASA  
Member, American Academy of Actuaries  
781-449-8325

**ACTUARIAL VALUATION  
OF THE  
PEABODY CONTRIBUTORY  
RETIREMENT SYSTEM**

**January 1, 2010**

**Reported Submitted  
December 20, 2010**



**35 Highland Circle • Needham, MA 02494 • Telephone (781) 449-4312 • Fax (781) 449-7623**

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## *Executive Summary*

### **Background**

We have completed the Actuarial Valuation of the Peabody Contributory Retirement System as of January 1, 2010. This valuation is based upon census data provided by the Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Peabody Retirement Board. Information for the prior valuation completed as of January 1, 2008 was obtained from the valuation report prepared by Buck Consultants.

### **Massachusetts General Laws**

The valuation was prepared in accordance with Chapter 32 of the Massachusetts General Laws ("M.G.L.") as amended by Section 18 of Chapter 21 of the Acts of 2009.

The valuation does not take into consideration:

- Changes in the law after the valuation date,
- Transfers between retirement systems pursuant to Section 3(8)(c) of Chapter 32,
- State-mandated benefits and
- Cost-of-living increases granted to members in pay status between 1982 and 1997.

### **GASB Statement Numbers 25 and 27**

The Governmental Accounting Standards Board (**GASB**) is responsible for establishing accounting standards for governmental entities. Calculations developed in accordance with GASB standards are required when providing financial statements.

GASB Statement Number 25 (**GASB 25**) establishes financial reporting standards for defined benefit pension plans of state and local governmental entities. The Statement establishes a framework that distinguishes between two categories of information: current financial information about plan assets and financial activities and actuarially determined information about the funded status of the plan and the progress being made in accumulating sufficient assets to pay benefits when due.

GASB Statement Number 27 establishes standards for the measurement, recognition, and display of pension expense and related liabilities, assets, note disclosures, and, if applicable, required supplementary information in the financial reports of state and local governmental employers. Employers are required to measure and disclose an amount for annual pension cost on the accrual basis of accounting, regardless of the amount recognized as pension expense on the accrual basis. Annual pension cost should be equal to the employer's Annual Required Contribution (ARC) to the plan.

The required disclosures under the GASB Statements are presented in Section V.

## *Executive Summary*

### **Actuarial Valuation**

The results of the current valuation show that over a two-year period, the System experienced an actuarial loss of \$29,258,335 comprising of an asset loss of \$16,236,799 and a liability loss of \$13,021,536. Approximately \$7,000,000 of the liability loss is attributable to a change in methodology from the prior actuary for recognizing valuation salary. For the 2008 valuation, salary data as of 2007 was used to determine benefit accruals for the 2008 plan year. For the 2010 valuation, we apply the salary scale to the 2009 salaries provided and use the result to develop benefits accrued during 2010. The details of the gain/loss calculations are presented in Exhibit D, Section III.

For 2010, the salary scale was changed to 3% for all years. Previously, the salary scale was 3% for 2010, 4% for years 2011-2014 and 5% for years 2015 and thereafter.

### **Appropriations**

The funding appropriation for each year is computed as the sum of the Normal Cost and an amortization payment to pay off the Unfunded Actuarial Liability, adjusted for quarterly payments of the appropriation made during the fiscal year. The appropriation as of January 1, 2010 is \$8,062,252. In Exhibit E, Section IV, we show how this calendar year funding appropriation is developed. We have incorporated the provisions of Section 18 of Chapter 21 of the Acts of 2009, which requires a funding schedule reflect appropriations that reduce the unfunded actuarial liability to zero by 2030. Previously, Section 22D required the unfunded actuarial liability be reduced to zero by 2028.

For fiscal year 2011, we show the actual appropriation developed under the previous funding schedule and reported on the PERAC "Required Fiscal Year 2011 Appropriation" letter dated January 21, 2010 of \$8,686,556 and adjusted the subsequent entries of the current funding schedule accordingly. The current funding schedule is shown in Exhibit G, Section IV.

### **Actuarial Certification**

This report presents the results of the Actuarial Valuation of the Peabody Contributory Retirement System as of January 1, 2010. The report presents the funding schedule contribution amounts for the fiscal years 2011, 2012 and 2013 and accounting and financial reporting information in accordance with Statement Numbers 25 and Number 27 of the Governmental Accounting Standards Board.

*Executive Summary*

This valuation is based upon member data provided by the Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Peabody Contributory Retirement System. Although we did not audit the data used in the valuation, we believe that the information is complete and reliable.

This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions used in the determination of costs are reasonably related to the experience of the System and to reasonable expectations, and represent our best estimate of anticipated long-term experience under the System.

This report is intended for the sole use of the Peabody Contributory Retirement System and is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

The undersigned credentialed actuaries are Members of the American Academy of Actuaries and together meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained herein. They are available to answer any questions with regard to this report.

Respectfully submitted,



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Linda L. Bournival, FSA  
Member, American Academy of Actuaries  
781-444-7121



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Stephen J. Ricci, ASA  
Member, American Academy of Actuaries  
781-449-8325

**Peabody Contributory Retirement System**  
**Actuarial Valuation as of January 1, 2010**

***Section I - Summary of Principal Valuation Results***

A summary of principal valuation results from the current valuation and the prior valuation follows. Changes in actuarial methods and assumptions and Plan provisions are discussed below, as well as changes in census data and asset information.

<u>Valuation Date</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>	<u>Increase / (Decrease)</u>
<b>Summary of Member Data</b>			
Active Members	829	834	(0.6%)
Average Age	49.1	48.4	1.4%
Average Service	12.5	11.6	7.8%
Salary (Prior Year)	\$38,952,940	\$34,123,789	14.2%
Average Salary	\$46,988	\$40,916	14.8%
Valuation Salary	\$40,121,529	\$34,123,789	17.6%
Retired Members and Beneficiaries	696	709	(1.8%)
Average Age	74.8	74.0	1.1%
Total Annual Pension	\$12,146,429	\$11,376,280	6.8%
Average Annual Pension	\$17,452	\$16,046	8.8%
Disabled Members	83	83	0.0%
Average Age	70.5	69.8	1.0%
Total Annual Pension	\$2,013,187	\$1,780,114	13.1%
Average Annual Pension	\$24,255	\$21,447	13.1%
Inactive Members	89	134	(33.6%)
Annuity Savings Fund	788,792	\$960,802	(17.9%)
<b>Actuarial Accrued Liability (AAL)</b>	<b>\$222,917,588</b>	<b>\$197,188,796</b>	<b>13.0%</b>
<b>Assets</b>			
Market Value of Assets	\$95,903,016	\$120,953,993	(20.7%)
Actuarial Value of Assets	115,083,619	118,848,128	(3.2%)
<b>Unfunded Accrued Liability (Surplus)</b>	<b>\$107,833,969</b>	<b>\$78,340,668</b>	<b>37.6%</b>
<b>Funded Status</b>	<b>51.6%</b>	<b>60.3%</b>	<b>(14.4%)</b>
<b>Normal Cost</b>			
Employer	\$1,479,688	\$1,636,944	(9.6%)
Employee	3,141,696	2,796,518	12.3%
Administrative Expenses	200,000	200,000	
Total Normal Cost	<u>\$4,821,384</u>	<u>\$4,633,462</u>	<u>4.1%</u>
<b>Appropriations</b>			
Fiscal Year 2011	\$8,686,556	\$8,686,556	0.0%
Fiscal Year 2012	\$8,965,723	\$8,965,723	0.0%
Fiscal Year 2013	\$9,253,002	\$9,253,002	0.0%

*Section I - Summary of Principal Valuation Results*

**Actuarial Valuation**

All Actuarial Methods and Assumptions used in this valuation, including an interest rate of 8.25%, are the same as those used in the prior valuation, except for the annual payment increase in computing the amortization payments and a change in the projected salary scale. The Actuarial Methods and Assumptions utilized in this valuation are detailed in Section VIII, Actuarial Methods and Assumptions. In addition, the 2010 valuation salary is the 2009 calendar year salary information provided by the Retirement Board updated to 2010 using the current year salary scale.

**Plan Provisions**

All Plan provisions used in this valuation are the same as those used in the prior valuation. The Plan provisions utilized in this valuation are detailed in Section VII, Summary of Plan Provisions.

**Census Data**

As of January 1, 2010, there are 829 active members who may be eligible for benefits in the future, 696 retirees and beneficiaries, 89 inactives and 83 disabled retirees. Summaries of the active and retired employees are included in Section IX, Demographic Information.

**Assets**

This valuation is based upon asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Peabody Retirement Board. The market value of assets decreased during the period January 1, 2008 through January 1, 2010, from \$120,953,993 as of January 1, 2008 to \$95,903,016 as of January 1, 2010. The valuation utilizes an actuarial value of assets to smooth market volatility. In Section II, we show how the actuarial asset value is developed.

***Section II - Asset Information***

Asset information is reported annually to the Public Employee Retirement Administration Commission by the Peabody Contributory Retirement System. The Market Value of Assets for the three most recent calendar years are as follows:

<u>Calendar Year</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>
<b>Trust Fund Composition at Year-End</b>			
Cash	\$1,145,493	\$793,129	\$612,575
Short-Term Investments	0	0	0
Fixed Income Securities	0	0	0
Pooled Short Term Funds	0	0	0
Equities	0	0	0
Pooled Domestic Equity Funds	0	0	0
Pooled International Equity Funds	0	0	0
Pooled Global Equity Funds	0	0	0
Pooled Domestic Fixed Income Funds	0	0	0
Pooled International Fixed Income Funds	0	0	0
Pooled Global Fixed Income Funds	0	0	0
Pooled Alternative Investments	0	0	0
Pooled Real Estate Funds	0	0	0
Pooled Domestic Balanced Funds	0	0	0
Pooled International Balanced Funds	0	0	0
Hedge Funds	0	0	0
PRIT Cash	0	0	0
PRIT Fund	92,016,552	80,333,838	117,328,984
Prepaid Expenses	0	0	0
Accounts Receivable	2,748,701	3,305,815	3,012,458
Interest Due & Accrued	0	0	0
Accounts Payable	(7,730)	(1,686)	(24)
Total Market Value of Assets	<u>\$95,903,016</u>	<u>\$84,431,096</u>	<u>\$120,953,993</u>

***Section II - Asset Information***

<u>Calendar Year</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>
<b>Funds</b>			
Annuity Savings Fund	\$35,449,581	\$33,540,407	\$31,559,472
Annuity Reserve Fund	12,284,036	12,276,662	12,535,877
Special Military Service Cr Fund	269	6,953	6,886
Pension Fund	3,755,431	3,662,663	3,458,461
Expense Fund	0	0	0
Pension Reserve Fund	44,413,699	34,944,411	73,393,297
Total Market Value of Assets	<u>\$95,903,016</u>	<u>\$84,431,096</u>	<u>\$120,953,993</u>
<b>Asset Activity</b>			
Market value as of Beginning of Year	\$84,431,096	\$120,953,993	\$112,296,002
Contributions and Receipts	12,848,207	12,288,959	11,855,561
Benefit Payments and Expenses	(14,865,471)	(14,424,407)	(14,123,489)
Investment Return	13,489,184	(34,387,449)	10,925,919
Market Value as of End of Year	<u>\$95,903,016</u>	<u>\$84,431,096</u>	<u>\$120,953,993</u>
<b>Rate of Return</b>	16.19%	-28.70%	9.84%

Returns and annualized past returns are shown below. Information is obtained from the Investment Report published by PERAC for the years shown.

<u>Year</u>	<u>1-Year Return</u>	<u>5-Year Return</u>	<u>10-Year Return</u>	<u>Return (Since 1985)</u>
2009	17.74%	1.61%	2.76%	8.55%
2008	-29.43%	0.20%	2.00%	8.18%

**Section II - Asset Information**

The **Actuarial Value of Assets** is the market value of assets as of the valuation date reduced by the sum of:

- a) 80% of gains and losses of the prior year,
- b) 60% of gains and losses of the second prior year,
- c) 40% of gains and losses of the third prior year and
- d) 20% of gains and losses of the fourth prior year.

Investment gains and losses are determined by the excess or deficiency of the expected return over the actual return on the market value. The actuarial valuation of assets is further constrained to be not less than 80% or more than 120% of market value.

<u>Valuation Date</u>	<u>January 1, 2010</u>	<u>January 1, 2009</u>	<u>January 1, 2008</u>
<b>1. Market Value of Assets as of prior January 1</b>	\$84,431,096	\$120,953,993	\$112,296,002
a. Prior Year Contributions and Receipts	12,848,207	12,288,959	11,855,561
b. Prior Year Benefit Payments and Expenses	(14,865,471)	(14,424,407)	(14,123,488)
c. Expected Investment Return at 8.25%	6,875,419	9,883,277	9,163,072
d. Expected Market Value of Assets as of Valuation Date	\$89,289,251	\$128,701,822	\$119,191,147
 <b>2. Prior Year Gain / (Loss)</b>			
a. Market Value of Assets as of January 1	\$95,903,016	\$84,431,096	\$120,953,993
b. Expected Market Value of Assets	89,289,251	128,701,822	119,191,147
c. Prior Year Gain / (Loss)	6,613,765	(44,270,726)	1,762,846

**Section II - Asset Information**

<u>Valuation Date</u>		<u>January 1, 2010</u>	<u>January 1, 2009</u>	<u>January 1, 2008</u>
<b>3. Phase-In of Asset Gains and Losses</b>				
	<u>Plan Year</u>	<u>Gain / (Loss)</u>	<u>Unrecognized Gain / (Loss)</u>	<u>Unrecognized Gain / (Loss)</u>
a.	2009	\$6,613,765	\$5,291,012	-
b.	2008	(44,270,726)	(26,562,436)	(35,416,581)
c.	2007	1,762,846	705,138	1,057,708
d.	2006	3,043,522	608,704	1,217,409
e.	2005	(3,397,114)	-	(679,423)
f.	2004	1,141,607	-	228,321
g.	Total		(19,957,582)	(33,820,887)
<b>4. Actuarial Value of Assets</b>				
a.	Market Value of Assets Less Unrecognized Gain / (Loss)		\$115,860,598	\$118,251,983
b.	80% of Market Value of Assets		76,722,413	67,544,877
c.	120% of Market Value of Assets		115,083,619	101,317,315
d.	Actuarial Value of Assets, a., but not less than b. and not greater than c.		<b>\$115,083,619</b>	<b>\$101,317,315</b>
e.	Ratio of Actuarial Value of Assets to Market Value of Assets		120.00%	120.00%
<b>5. Rate of Return on Actuarial Value of Assets for Prior Calendar Year</b>			15.75%	-13.08%

***Section III - Actuarial Costs and Liabilities***

The **Actuarial Present Value of Future Benefits** is the present value of the cost to finance all benefits payable in the future, discounted to reflect the probability of payment and the time value of money. Below is the Actuarial Present Value of Future Benefits from the current valuation and the prior valuation:

**Exhibit A - Actuarial Present Value of Future Benefits**

<u>Valuation Date</u>	<u>January 1, 2010</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>
Valuation Basis	Assumption Change	Baseline	
<b>Actives</b>			
Superannuation	\$106,383,114	\$120,715,185	\$102,041,919
Termination	3,285,614	3,335,991	2,899,648
Death	4,352,739	4,811,247	3,574,470
Disability	11,946,468	13,175,210	13,631,018
Total Active	\$125,967,935	\$142,037,633	\$122,147,055
<b>Retired Members and Inactives</b>			
Retired Members and Beneficiaries	\$101,070,668	\$101,070,668	\$95,520,263
Disabled Members	16,127,712	16,127,712	14,975,853
Inactive Members	788,792	788,792	960,802
Total Retired Members and Inactives	\$117,987,172	\$117,987,172	\$111,456,918
<b>Total Present Value of Future Benefits</b>	<b>\$243,955,107</b>	<b>\$260,024,805</b>	<b>\$233,603,973</b>

***Section III - Actuarial Costs and Liabilities***

The **Actuarial Accrued Liability** is the portion of the Actuarial Present Value of Future Benefits which is allocated to all periods prior to a valuation year and therefore is not provided for by future Normal Costs. Below is the Actuarial Accrued Liability from the current valuation and the prior valuation:

**Exhibit B - Actuarial Accrued Liability**

<u>Valuation Date</u>	<u>January 1, 2010</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>
Valuation Basis	Assumption Change	Baseline	
<b>Actives</b>			
Superannuation	\$85,567,657	\$93,719,222	\$76,027,071
Termination	1,693,838	1,690,675	1,385,129
Death	2,632,701	2,828,536	2,030,775
Disability	6,299,810	6,691,983	6,288,903
Total Active	\$96,194,006	\$104,930,416	\$85,731,878
<b>Retired Members and Inactives</b>			
Retired Members and Beneficiaries	\$101,070,668	\$101,070,668	\$95,520,263
Disabled Members	16,127,712	16,127,712	14,975,853
Inactive Members	788,792	788,792	960,802
Total Retired Members and Inactives	\$117,987,172	\$117,987,172	\$111,456,918
<b>Total Actuarial Accrued Liability</b>	<b>\$214,181,178</b>	<b>\$222,917,588</b>	<b>\$197,188,796</b>

***Section III - Actuarial Costs and Liabilities***

The **Normal Cost** is the portion of the Actuarial Present Value of Future Benefits which is allocated to a valuation year. Only active employees who have not reached Normal Retirement Age incur a Normal Cost. Below is the Normal Cost from the current valuation and the prior valuation:

**Exhibit C - Normal Cost**

<u>Valuation Date</u>	<u>January 1, 2010</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>
Valuation Basis	Assumption Change	Baseline	
<b>Actives</b>			
Superannuation	\$2,816,161	\$3,224,350	\$3,065,431
Termination	422,112	421,505	375,835
Death	243,917	254,385	192,781
Disability	697,258	721,144	799,415
Total Active	\$4,179,448	\$4,621,384	\$4,433,462
<b>Administrative Expenses</b>	\$200,000	\$200,000	\$200,000
<b>Total Normal Cost</b>			
Normal Cost	\$4,379,448	\$4,821,384	\$4,633,462
As a Percentage of Salary	10.9%	12.0%	13.6%
<b>Employee Normal Cost</b>			
Employee Contributions	\$3,125,375	\$3,141,696	\$2,796,518
As a Percentage of Salary	7.8%	7.8%	8.2%
<b>Employer Normal Cost</b>			
Employer Normal Cost	\$1,254,073	\$1,679,688	\$1,836,944
As a Percentage of Salary	3.1%	4.2%	5.4%

***Section III - Actuarial Costs and Liabilities***

In performing the actuarial valuation, various assumptions are made regarding mortality, retirement, disability and withdrawal rates as well as salary increases and investment returns. A comparison of the results of the current valuation and the prior valuation is made to determine how closely actual experience relates to expected. During the two years since the last valuation, the total unfunded actuarial accrued liability of the System increased by \$29,493,300. Below is the development of the Actuarial Gain or Loss for the current 2-year period:

<u>Valuation Date</u>	<b>Exhibit D - Actuarial Experience</b>	
	<u>January 1, 2010</u>	<u>January 1, 2008</u>
<b>Unfunded Actuarial Accrued Liability</b>		
a. Actuarial Accrued Liability	\$222,917,588	\$197,188,796
b. Actuarial Value of Assets	115,083,619	118,848,127
c. Unfunded Actuarial Accrued Liability	\$107,833,969	\$78,340,669
<b>Expected Actuarial Accrued Liability</b>		
a. Prior Actuarial Accrued Liability	\$197,188,796	
b. Normal Cost, Year 1	4,633,462	
c. Benefit Payments, Year 1	(14,424,407)	
d. Interest on a., b. and c.	16,005,746	
e. Expected Actuarial Accrued Liability, Year 1	\$203,403,597	
f. Normal Cost, Year 2	4,841,968	
g. Benefit Payments, Year 2	(14,865,471)	
h. Interest on e., f. and g.	16,515,958	
i. Expected Actuarial Accrued Liability, Year 2	\$209,896,052	
j. Actual Actuarial Accrued Liability	\$222,917,588	
k. Liability (Gain) / Loss	\$13,021,536	

**Section III - Actuarial Costs and Liabilities**

**Exhibit D - Actuarial Experience, continued**

<u>Valuation Date</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>
<b>Expected Actuarial Asset Value</b>		
a. Actuarial Value of Assets, Prior Valuation Date	118,848,127	
b. Normal Cost and Amortization Payments, Year 1	10,400,671	
c. Benefit Payments, Year 1	(14,424,407)	
d. Expected Investment Return	10,018,435	
e. Expected Actuarial Value of Assets	124,842,826	
f. Normal Cost and Amortization Payments, Year 2	10,815,548	
g. Benefit Payments, Year 2	(14,865,471)	
h. Expected Investment Return	10,527,515	
i. Expected Actuarial Value of Assets	131,320,418	
j. Actual Actuarial Value of Assets	\$115,083,619	
k. Asset (Gain) / Loss	\$16,236,799	
<b>Expected Unfunded Actuarial Accrued Liability</b>	<b>\$78,575,634</b>	
<b>Total Actuarial (Gain) / Loss</b>		
a. Asset (Gain) / Loss	\$16,236,799	(\$869,750)
b. Liability (Gain) / Loss	13,021,536	3,527,976
c. Total (Gain) / Loss	\$29,258,335	\$2,658,226

***Section IV - Chapter 32 of M.G.L. Appropriations***

The **Annual Appropriation** is determined in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws ("M.G.L.") as amended by Section 18 of Chapter 21 of the Acts of 2009. The appropriation is comprised of the annual employer normal cost and amortization payments to pay the unfunded actuarial accrued liability. Below are the details of the annual appropriation for the current valuation and the prior valuation. The annual appropriation for the following valuation is recomputed based on the actual appropriation made for the current fiscal year:

**Exhibit E - Annual Appropriations**

<u>Valuation Date</u>	<u>January 1, 2011</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>
<b>Employer Normal Cost</b>	\$1,253,690	\$1,254,073	\$1,836,944
<b>Amortization Payments</b>			
a. Prior Unfunded Actuarial Accrued Liability	\$98,511,816	\$77,170,977	\$74,262,729
Amortization Period (in years)	19	20	20
Interest Rate	8.25%	8.25%	8.25%
Payment Increase Rate	4.50%	4.50%	3.60%
Amortization Payment as of January 1	\$6,989,916	\$5,283,803	\$5,458,312
b. Early Retirement Incentive	\$1,391,438	\$1,404,657	\$1,419,715
Amortization Period (in years)	17	18	20
Interest Rate	8.25%	8.25%	8.25%
Payment Increase Rate	2.50%	2.50%	2.50%
Amortization Payment	\$122,245	\$119,264	\$113,517
e. Current Gain or Loss*	(\$47,826)	\$29,258,335	\$2,658,226
Amortization Period (in years)	19	20	20
Interest Rate	8.25%	8.25%	8.25%
Payment Increase Rate	4.50%	4.50%	3.60%
Amortization Payment	(\$3,393)	\$2,003,283	\$195,380
f. Assumption Change	\$0	(\$8,736,410)	\$0
Amortization Period (in years)	19	20	20
Interest Rate	8.25%	8.25%	8.25%
Payment Increase Rate	4.50%	4.50%	3.60%
Amortization Payment	\$0	(\$598,171)	\$0
g. Plan Change	\$0	\$0	\$0
Amortization Period (in years)	19	20	20
Interest Rate	8.25%	8.25%	8.25%
Payment Increase Rate	4.50%	4.50%	3.60%
Amortization Payment	\$0	\$0	\$0
h. Total Amortization Payments	\$7,108,768	\$6,808,179	\$5,767,209

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**Exhibit E - Annual Appropriations, continued**

<u>Valuation Date</u>	<u>January 1, 2011</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>
Employer Normal Cost	\$1,253,690	\$1,254,073	\$1,836,944
Total Amortization Payments	\$7,108,768	\$6,808,179	\$5,767,209
Total Cost as of January 1	\$8,362,458	\$8,062,252	\$7,604,153
Salary	\$41,926,998	\$40,121,529	\$34,123,789
Total Cost as a Percent of Salary	19.9%	20.1%	22.3%
<b>* Current Gain or Loss</b>			
a. Fiscal Year Appropriation	8,686,556		
b. Discounted to current valuation date	8,106,433		
c. Appropriation based on current valuation	8,062,252		
d. Excess Contribution as of current valuation	44,181		
e. Excess Contribution as of next valuation = d. x (1.0825).	47,826		

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In **Exhibit F**, we present **Total Employer Cost Forecast as of January 1**, a thirty-year funding forecast as of the calendar years based on the calculations for the current valuation in this report and from assumptions noted below:

- Payroll and Total Normal Cost are both expected to increase 4.50% per year.
- The Employee Contribution rate is shown to increase linearly from the 2010 percentage to 10.50% by 2030 as members contributing at the lower rates are replaced by new members contributing over 9%.
- Employer Normal Cost is the difference between Total Normal Cost and Employee Contributions.
- The Unfunded Actuarial Accrued Liability ("UAL") is computed as of January 1 of each year assuming no future gains or losses.
- The Amortization Payment of UAL is an increasing amortization of the UAL, excluding the UAL attributable to the Early Retirement Incentive ("ERI") program, over 20 years through 2030 with payments increasing 4.50% per year, which reflects the recent law changes. Previously, the UAL was amortized through 2028 with payments increasing by 4.50% per year.
- The Amortization Payment of ERI is an increasing amortization of the UAL attributable to the ERI program over 18 years with payments increasing by 2.50% per year, consistent with the method used in the past.
- Total Employer Cost is the sum of the Employer Normal Cost, the Amortization of the UAL and the Amortization of the ERI, all computed as of January 1 of each year.
- Total Employer Cost for Fiscal Year 2011 is consistent with the previously approved appropriation and the amortization of the UAL for 2010 is adjusted to reflect this.

In **Exhibit G**, we present **30-Year Forecast of Annual Appropriation**, a Section 22D funding forecast as of the fiscal years. The calculations shown in a year are based upon the calculations shown in Exhibit F for the prior January 1 with the cost adjusted for equal employer contributions for the fiscal year assumed to be made July 1, October 1, January 1 and April 1 of that fiscal year.

In **Exhibit H**, we present **30-Year Forecast of Cash Flow**, a forecast as of the calendar years based on the information on contributions shown in Exhibit F and the assumptions noted below.

- Benefit payments exclude cost-of-living increases granted to members in pay status between 1982 and 1997. In addition, benefit payments are as expected for the first ten years of the forecast, then increase by the greater of 4.50% per year thereafter or the expected future payments for the current population projected by our computer model.
- Total Expected Actuarial Value of Assets assumes no asset gains or losses in any years following the valuation date.
- The Funded Ratio % is the ratio of the Expected Actuarial Value of Assets over the sum of the Unfunded Actuarial Accrued Liability and the Expected Actuarial Value of Assets.

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Exhibit F - Total Employer Cost Forecast as of January 1  
Calendar Year Projections

Calendar Year	Payroll	Total Normal Cost	Employee Contributions	Employer Normal Cost	UAL	Amortization Payment of UAL	Amortization Payment of UAL of ERI	Amortization Payment of ERI	Total Employer Cost	Employer Cost as a Percent of Payroll
2010	\$40,121,529	\$4,379,448	\$3,125,375	\$1,254,073	\$97,692,902	\$6,733,096	\$1,404,657	\$119,264	\$8,106,433	20.2%
2011	41,926,998	4,576,523	3,322,833	1,253,690	98,463,990	6,991,022	1,391,438	122,245	8,366,957	20.0%
2012	43,813,713	4,782,467	3,531,733	1,250,734	99,019,488	7,259,014	1,373,901	125,301	8,635,049	19.7%
2013	45,785,330	4,997,678	3,752,705	1,244,973	99,330,713	7,632,537	1,351,610	128,434	9,005,944	19.7%
2014	47,845,670	5,222,574	3,986,413	1,236,161	99,263,276	7,976,001	1,324,088	131,645	9,343,807	19.5%
2015	49,998,725	5,457,590	4,233,556	1,224,034	98,818,475	8,334,921	1,290,820	134,936	9,693,891	19.4%
2016	52,248,668	5,703,182	4,494,869	1,208,313	97,948,447	8,709,993	1,251,244	138,309	10,056,615	19.2%
2017	54,599,858	5,959,825	4,771,127	1,188,698	96,600,626	9,101,943	1,204,752	141,767	10,432,408	19.1%
2018	57,056,852	6,228,017	5,063,146	1,164,871	94,717,324	9,511,530	1,150,681	145,311	10,821,712	19.0%
2019	59,624,410	6,508,278	5,371,786	1,136,492	92,235,272	9,939,549	1,088,313	148,944	11,224,985	18.8%
2020	62,307,508	6,801,151	5,697,950	1,103,201	89,085,120	10,386,828	1,016,867	152,668	11,642,697	18.7%
2021	65,111,346	7,107,203	6,042,591	1,064,612	85,190,901	10,854,236	935,495	156,484	12,075,332	18.5%
2022	68,041,357	7,427,027	6,406,712	1,020,315	80,469,440	11,342,676	843,279	160,397	12,523,388	18.4%
2023	71,103,218	7,761,243	6,791,367	969,876	74,829,722	11,853,097	739,220	164,406	12,987,379	18.3%
2024	74,302,863	8,110,499	7,197,667	912,832	68,172,197	12,386,486	622,236	168,517	13,467,835	18.1%
2025	77,646,492	8,475,471	7,626,782	848,689	60,388,032	12,943,878	491,151	172,730	13,965,297	18.0%
2026	81,140,584	8,856,867	8,079,942	776,925	51,358,297	13,526,353	344,691	177,048	14,480,326	17.8%
2027	84,791,910	9,255,426	8,558,442	696,984	40,953,079	14,135,038	181,474	181,474	15,013,496	17.7%
2028	88,607,546	9,671,920	9,063,646	608,274	29,030,529	14,771,115	-	-	15,379,389	17.4%
2029	92,594,886	10,107,156	9,596,986	510,170	15,435,816	15,435,816	-	-	15,945,986	17.2%
2030	96,761,656	10,561,978	10,159,974	402,004	-	-	-	-	402,004	0.4%
2031	101,115,931	11,037,267	10,617,173	420,094	-	-	-	-	420,094	0.4%
2032	105,666,148	11,533,944	11,094,946	438,998	-	-	-	-	438,998	0.4%
2033	110,421,125	12,052,971	11,594,218	458,753	-	-	-	-	458,753	0.4%
2034	115,390,076	12,595,355	12,115,958	479,397	-	-	-	-	479,397	0.4%
2035	120,582,629	13,162,146	12,661,176	500,970	-	-	-	-	500,970	0.4%
2036	126,008,847	13,754,443	13,230,929	523,514	-	-	-	-	523,514	0.4%
2037	131,679,245	14,373,393	13,826,321	547,072	-	-	-	-	547,072	0.4%
2038	137,604,811	15,020,196	14,448,505	571,691	-	-	-	-	571,691	0.4%
2039	143,797,027	15,696,105	15,098,688	597,417	-	-	-	-	597,417	0.4%

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Below we present an Appropriations Forecast over the next thirty years under the adopted funding schedule. The cost components of the Total Employer Cost Forecast presented in Exhibit F have been adjusted to account for quarterly payments of the appropriation payable during the fiscal year.

**Exhibit G - 30-Year Forecast of Annual Appropriations**

Fiscal Year Ending	Total Normal Cost	Employee Contributions	Employer Normal Cost	Amortization Payment of UAL	Amortization Payment of ERI	Total Employer Cost
2011	\$4,692,855	\$3,349,037	\$1,343,818	\$7,214,939	\$127,799	\$8,686,556
2012	4,904,033	3,560,626	1,343,407	7,491,323	130,993	8,965,723
2013	5,124,717	3,784,475	1,340,242	7,778,492	134,268	9,253,002
2014	5,355,328	4,021,261	1,334,067	8,178,746	137,625	9,650,438
2015	5,596,318	4,271,694	1,324,624	8,546,790	141,066	10,012,480
2016	5,848,153	4,536,523	1,311,630	8,931,395	144,592	10,387,617
2017	6,111,320	4,816,536	1,294,784	9,333,308	148,207	10,776,299
2018	6,386,329	5,112,564	1,273,765	9,753,308	151,912	11,178,985
2019	6,673,714	5,425,481	1,248,233	10,192,206	155,710	11,596,149
2020	6,974,032	5,756,208	1,217,824	10,650,855	159,603	12,028,282
2021	7,287,864	6,105,714	1,182,150	11,130,143	163,593	12,475,886
2022	7,615,818	6,475,018	1,140,800	11,631,000	167,683	12,939,483
2023	7,958,529	6,865,197	1,093,332	12,154,395	171,876	13,419,603
2024	8,316,663	7,277,379	1,039,284	12,701,343	176,171	13,916,798
2025	8,690,913	7,712,755	978,158	13,272,903	180,577	14,431,638
2026	9,082,003	8,172,579	909,424	13,870,184	185,091	14,964,699
2027	9,490,693	8,658,169	832,524	14,494,343	189,718	15,516,585
2028	9,917,774	9,170,912	746,862	15,146,587	194,461	16,087,910
2029	10,364,075	9,712,270	651,805	15,828,184	-	16,479,989
2030	10,830,457	10,283,778	546,679	16,540,453	-	17,087,132
2031	11,317,828	10,887,055	430,773	-	-	430,773
2032	11,827,130	11,376,972	450,158	-	-	450,158
2033	12,359,352	11,888,936	470,416	-	-	470,416
2034	12,915,521	12,423,938	491,583	-	-	491,583
2035	13,496,720	12,983,015	513,705	-	-	513,705
2036	14,104,072	13,567,251	536,821	-	-	536,821
2037	14,738,756	14,177,777	560,979	-	-	560,979
2038	15,402,000	14,815,778	586,222	-	-	586,222
2039	16,095,090	15,482,487	612,603	-	-	612,603
2040	16,819,369	16,179,199	640,170	-	-	640,170

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Below we present a thirty-year forecast of **Cash Flow**.

Exhibit H - 30-Year Forecast of Cash Flow

Calendar Year	Assets as of Beginning of Fiscal Year	Benefit Payments	Employee Contributions	Employer Contributions	Investment Return	Assets as of End of Fiscal Year	Expected Actuarial Value of Assets	Unfunded Actuarial Liability	Funded Ratio
2010	\$95,903,016	\$14,974,866	\$3,125,375	\$8,106,433	\$8,169,434	\$100,329,392	\$115,083,619	\$99,097,559	53.7%
2011	100,329,392	15,641,898	3,322,833	8,366,957	8,542,585	104,919,870	113,716,854	99,855,428	53.2%
2012	104,919,870	16,414,796	3,531,733	8,635,049	8,926,113	109,597,968	111,128,509	100,393,389	52.5%
2013	109,597,968	17,145,973	3,752,705	9,005,944	9,328,210	114,538,854	108,275,215	100,682,323	51.8%
2014	114,538,854	17,771,729	3,986,413	9,343,807	9,755,024	119,852,369	114,538,854	100,587,364	53.2%
2015	119,852,369	18,349,663	4,233,556	9,693,891	10,216,834	125,646,987	119,852,369	100,109,295	54.5%
2016	125,646,987	18,931,613	4,494,869	10,056,615	10,720,367	131,987,225	125,646,987	99,199,691	55.9%
2017	131,987,225	19,472,895	4,771,127	10,432,408	11,273,043	138,990,908	131,987,225	97,805,378	57.4%
2018	138,990,908	20,072,416	5,063,146	10,821,712	11,880,265	146,683,615	138,990,908	95,868,005	59.2%
2019	146,683,615	20,660,791	5,371,786	11,224,985	12,547,353	155,166,948	146,683,615	93,323,585	61.1%
2020	155,166,948	21,590,527	5,697,950	11,642,697	13,267,050	164,184,118	155,166,948	90,101,987	63.3%
2021	164,184,118	22,562,101	6,042,591	12,075,332	14,031,675	173,771,615	164,184,118	86,126,396	65.6%
2022	173,771,615	23,577,396	6,406,712	12,523,388	14,844,277	183,968,596	173,771,615	81,312,719	68.1%
2023	183,968,596	24,638,379	6,791,367	12,987,379	15,708,128	194,817,091	183,968,596	75,568,942	70.9%
2024	194,817,091	25,747,106	7,197,667	13,467,835	16,626,740	206,362,227	194,817,091	68,794,433	73.9%
2025	206,362,227	26,905,726	7,626,782	13,965,297	17,603,881	218,652,461	206,362,227	60,879,183	77.2%
2026	218,652,461	28,116,484	8,079,942	14,480,326	18,643,595	231,739,840	218,652,461	51,702,988	80.9%
2027	231,739,840	29,381,726	8,558,442	15,013,496	19,750,226	245,680,278	231,739,840	41,134,553	84.9%
2028	245,680,278	30,703,904	9,063,646	15,379,389	20,913,093	260,332,502	245,680,278	29,030,529	89.4%
2029	260,332,502	32,085,580	9,596,986	15,945,986	22,150,902	275,940,796	260,332,502	15,435,816	94.4%
2030	275,940,796	33,529,431	10,159,974	402,004	22,138,132	275,111,475	275,940,796	-	100.0%
2031	275,111,475	35,038,255	10,617,173	420,094	22,041,499	273,151,986	275,111,475	-	100.0%
2032	273,151,986	36,614,976	11,094,946	438,998	21,850,358	269,921,312	273,151,986	-	100.0%
2033	269,921,312	38,262,650	11,594,218	458,753	21,553,016	265,264,649	269,921,312	-	100.0%
2034	265,264,649	39,984,469	12,115,958	479,397	21,136,644	259,012,179	265,264,649	-	100.0%
2035	259,012,179	41,783,770	12,661,176	500,970	20,587,170	250,977,725	259,012,179	-	100.0%
2036	250,977,725	43,664,040	13,230,929	523,514	19,889,167	240,957,295	250,977,725	-	100.0%
2037	240,957,295	45,628,922	13,826,321	547,072	19,025,739	228,727,505	240,957,295	-	100.0%
2038	228,727,505	47,682,223	14,448,505	571,691	17,978,386	214,043,864	228,727,505	-	100.0%
2039	214,043,864	49,827,923	15,098,688	597,417	16,726,862	196,638,908	214,043,864	-	100.0%

***Section V - GASB Statement Numbers 25 and 27***

The Governmental Accounting Standards Board (GASB) requires certain disclosures of pension liabilities for public employer financial statements in accordance with Statement Numbers 25 and 27. Footnote disclosures required by GASB Statement Numbers 25 and 27 include a description of the Plan, a summary of significant accounting policies and information about contributions, legally required reserves and investment concentrations. The Annual Required Contribution (ARC) shown is for the fiscal year beginning the following July 1.

Below is the required disclosure information:

<u>Valuation Date</u>	<u>January 1, 2010</u>	<u>January 1, 2008</u>
1. Actuarial Accrued Liability	\$214,181,178	\$197,188,796
2. Actuarial Value of Assets	115,083,619	118,848,128
3. Unfunded Actuarial Accrued Liability (UAAL)	\$99,097,559	\$78,340,668
4. Funded Ratio = 2. ÷ 1.	53.7%	60.3%
5. Covered Payroll	\$40,121,529	\$34,123,789
6. UAAL as a Percentage of Covered Payroll = 3. ÷ 5.	247.0%	229.6%
7. Annual Required Contribution (ARC)	\$8,686,556	\$8,107,198
8. Net Pension Obligation	\$0	\$0

**Schedule of Funding Progress**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) / c)
1/1/2010	115,083,619	222,917,588	107,833,969	51.6%	40,121,529	268.8%
1/1/2008	118,848,126	197,188,796	78,340,670	60.3%	34,123,789	229.6%
1/1/2006	104,655,164	180,486,960	75,831,796	58.0%	31,975,544	237.2%
1/1/2004	102,120,540	164,343,243	62,222,703	62.1%	30,307,667	205.3%
1/1/2002	99,748,173	153,861,741	54,113,568	64.8%	28,963,912	186.8%
1/1/2000	93,787,686	131,602,457	37,814,771	71.3%	25,354,706	149.1%
1/1/1998	73,920,249	121,580,729	47,660,480	60.8%	23,080,847	206.5%

**Section VI - PERAC Disclosure Information**

The most recent actuarial valuation of the System was prepared by Ricci Consultants, Incorporated as of January 1, 2010.

The normal cost for employees on that date was:	\$3,125,375	7.8% of payroll
The normal cost for the employer was:	\$1,254,073	3.1% of payroll

The actuarial liability for active members was:	\$96,194,006
The actuarial liability for retired and inactive members was:	117,987,172
Total actuarial liability:	\$214,181,178
System assets as of that date:	\$115,083,619
Unfunded actuarial accrued liability:	\$99,097,559

The ratio of System assets to total actuarial accrued liability was: 53.7%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.25%
Rate of Salary Increase:	3.00%

**Schedule of Funding Progress**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) / c)
1/1/2010	115,083,619	222,917,588	107,833,969	51.6%	40,121,529	268.8%
1/1/2008	118,848,126	197,188,796	78,340,670	60.3%	34,123,789	229.6%
1/1/2006	104,655,164	180,486,960	75,831,796	58.0%	31,975,544	237.2%
1/1/2004	102,120,540	164,343,243	62,222,703	62.1%	30,307,667	205.3%
1/1/2002	99,748,173	153,861,741	54,113,568	64.8%	28,963,912	186.8%
1/1/2000	93,787,686	131,602,457	37,814,771	71.3%	25,354,706	149.1%
1/1/1998	73,920,249	121,580,729	47,660,480	60.8%	23,080,847	206.5%

**Section VII - Summary of Plan Provisions**

**Administration** There are 107 contributory retirement systems for public employees in Massachusetts. Each system is governed by a retirement board and all boards, although operating independently, are governed by Chapter 32 of the Massachusetts General Laws and other applicable statutes. This law in general provides uniform benefits, uniform contribution requirements and a uniform accounting and funds structure for all systems.

**Participation** Participation is mandatory for all full-time employees. Eligibility with respect to part-time, provisional, temporary, seasonal or intermittent employment is governed by regulations promulgated by the local retirement board, and approved by PERAC. Membership is optional for certain elected officials.

There are four classes of membership in the retirement system:

Group 1: General employees, including clerical, administrative, technical and all other employees not otherwise classified.

Group 2: Certain specified hazardous duty positions.

Group 3: State police officers and inspectors.

Group 4: Local police officers, firefighters and other specified hazardous positions.

For members in more than one group, participation will be proportional.

**Member Contributions** Member contributions vary depending on the most recent date of membership:

Prior to 1975:	5% of Salary
1975 – 1983:	7% of Salary
1984 – June 30, 1996:	8% of Salary
July 1, 1996 – present:	9% of Salary
1979 – present:	An additional 2% of Salary in excess of \$30,000.

**Rate of Interest** Interest on regular deductions made after January 1, 1984 is a rate established by PERAC in consultation with the Commissioner of Banks. The rate is obtained from the average rates paid on individual savings accounts by a representative sample of at least ten financial institutions.

**Retirement Age** The mandatory retirement age for some Group 2 and Group 4 members is age 65. Most Group 2 and Group 4 members may remain in service after reaching age 65. Group 4 members who are employed in certain public safety positions are required to retire at age 65. There is no mandatory retirement age for members in Group 1.

**Salary** Gross regular compensation. This does not include bonuses, overtime, severance pay, unused sick leave credit or other similar compensation.



**Section VII - Summary of Plan Provisions**

<b>Deferred Vested</b>	Eligibility	<ul style="list-style-type: none"> <li>• completion of ten or more years of Creditable Service.</li> <li>• elected officials hired prior to 1978, completion of six years of Creditable Service.</li> </ul>
	Benefit Amount	Accrued benefit payable commencing at age 55, or the completion of 20 years of Creditable Service, or may be deferred until later at the participant's option.
<b>Withdrawal of Contributions</b>		Contributions may be withdrawn upon termination of employment.
		<ul style="list-style-type: none"> <li>• Members hired prior to 1984 receive contributions plus 100% of interest credited.</li> <li>• Members hired after 1983 with less than five years of Creditable Service receive contributions only.</li> <li>• Members hired after 1983 with more than five years of Creditable Service but less than ten years receive contributions plus 50% of interest credited.</li> <li>• Members hired after 1983 with more than ten years of Creditable Service receive contributions plus 100% of interest credited.</li> </ul>
<b>Ordinary Disability Retirement</b>	Eligibility	Non-job related disability after completion of ten years of Creditable Service.
	Benefit Amount	Superannuation benefit determined if the member is age 55, up to a maximum of 80% of Average Salary over three years. If the member is a veteran, 50% of final rate of salary (final year) plus an annuity based on the accumulated member contributions plus credited interest, up to a maximum of 80% of Average Salary over five years.
<b>Accidental Disability Retirement</b>	Eligibility	Disabled as a result of an accident in the performance of duties. There is no minimum age or service requirement.
	Benefit Amount	72% of Salary plus an annuity based on accumulated member contributions plus credited interest.
	Maximum Benefit	100% of Salary if hired before January 1, 1988, otherwise 75% of Salary.
	Veteran's Benefit	Additional allowance of \$15 per year of Creditable Service, up to a maximum of \$300.
	Supplemental Dependent Allowance	Additional allowance of \$415 per year for each child.

**Section VII - Summary of Plan Provisions**

<b>Non-Occupational Death</b>	Eligibility	For members with at least two years of creditable service who die while in active service, but not due to occupational injury.
	Benefit Amount	Benefit as if Option C had been elected. Minimum benefit of
<b>Accidental Death</b>	Eligibility	For members who die as a result of an occupational injury.
	Benefit Amount	72% of Salary plus an annuity based on accumulated member contributions plus credited interest.
	Maximum Benefit	100% of Salary if hired before January 1, 1988, otherwise 75% of Salary.
	Veteran's Benefit	Additional allowance of \$15 per year of creditable service, up to a maximum of \$300.
	Supplemental Dependent Allowance	Additional allowance of \$415 per year for each child.
<b>Cost-of-Living Adjustment (COLA)</b>	In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a Cost-of-Living Adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees and beneficiaries who have been receiving benefit payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the Commonwealth of Massachusetts and are not the liability of the Retirement System.	
<b>Optional Forms of Payment</b>	A member may elect to receive his or her retirement allowance in one of three forms of payment:	
	<ul style="list-style-type: none"> <li>• Option A – Life annuity.</li> <li>• Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member.</li> <li>• Option C – Life annuity with 66<math>\frac{2}{3}</math>% of benefit continued to designated joint annuitant upon death of member.</li> </ul>	

**Section VIII - Actuarial Methods and Assumptions**

**Valuation Date:** January 1, 2010

**Investment Return:** 8.25% per year

**Annuity Savings Fund Interest Rate:** 3.00% per year

**Amortization Method:** *Prior Unfunded Actuarial Accrued Liability:*  
 Increasing dollar amount at 4.50% to reduce the Unfunded Actuarial Liability, excluding any Early Retirement Incentive program (ERI) and excluding the current year gain or loss, to zero on or before June 30, 2030. Previously, increasing dollar amount at 4.50% and fully funded on or before June 30, 2028.

*Early Retirement Incentive Program:*  
 Increasing dollar amount at 2.50% to reduce the Unfunded Actuarial Liability attributable to the Early Retirement Incentive Program (ERI) to zero on or before June 30, 2028. No change from prior valuation.

*Current Year Gain or Loss:*  
 Increasing dollar amount at 4.50% to reduce the Unfunded Actuarial Liability attributable to the Current Year Gain or Loss to zero on or before June 30, 2030. Previously, increasing dollar amount at 4.50% and fully funded on or before June 30, 2028.

**Salary Scale:** The assumed annual rates for salary increases including longevity are illustrated by the following rates:

<u>Year</u>	<u>General Employees</u>	<u>Police and Fire</u>
All years	3.00%	3.00%

**Cost-of-Living Allowance:** Cost-of-Living Allowances (COLA) are assumed to be 3% of the pension amount, capped at \$360 per year.

**Mortality Table:** RP-2000 Mortality Table. RP-2000 Mortality Table set forward two years for disabled members.

*General Employees:* 20% of deaths are accidental.

*Police and Fire:* 20% of deaths are accidental.

**Section VIII - Actuarial Methods and Assumptions**

**Turnover Rates:** Illustrative turnover rates are shown below:

<u>Creditable</u>	<u>General Employees</u>	<u>Police and Fire</u>
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

**Disability Rates:** Illustrative disability rates are shown below:

<u>Attained Age</u>	<u>General Employees</u>	<u>Police and Fire</u>
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125

*General Employees:* 55% of disabilities are accidental and 45% are ordinary.

*Police and Fire:* 90% of disabilities are accidental and 10% are ordinary.

**Retirement Rates:** Illustrative retirement rates are shown below:

<u>Age</u>	<u>General Employees</u>		<u>Police and Fire</u>
	<u>Male</u>	<u>Female</u>	<u>Male &amp; Female</u>
50	0.0100	0.0150	0.0200
51	0.0100	0.0150	0.0200
52	0.0100	0.0200	0.0200
53	0.0100	0.0250	0.0500
54	0.0200	0.0250	0.0750
55	0.0200	0.0550	0.1500
56	0.0250	0.0650	0.1000
57	0.0250	0.0650	0.1000
58	0.0500	0.0650	0.1000
59	0.0650	0.0650	0.1500
60	0.1200	0.0500	0.2000
61	0.2000	0.1300	0.2000
62	0.3000	0.1500	0.2500
63	0.2500	0.1250	0.2500
64	0.2200	0.1800	0.3000
65	0.4000	0.1500	1.0000
66	0.2500	0.2000	1.0000
67	0.2500	0.2000	1.0000
68	0.3000	0.2500	1.0000
69	0.3000	0.2000	1.0000
70	1.0000	1.0000	1.0000

**Section VIII - Actuarial Methods and Assumptions**

- Actuarial Cost Method:** Individual Entry Age Normal.
- Actuarial Asset Method:** The Actuarial Value of Assets is the market value of assets as of the valuation date reduced by the sum of:
- a) 80% of gains and losses of the prior year,
  - b) 60% of gains and losses of the second prior year,
  - c) 40% of gains and losses of the third prior year and
  - d) 20% of gains and losses of the fourth prior year.
- Investment gains and losses are determined by the excess or deficiency of the expected return over the actual return on the market value. The actuarial valuation of assets is further constrained to be not less than 80% or more than 120% of market value.
- Census Data:** Census data as of the valuation date were submitted by the Retirement Board.
- Asset Data:** Asset information is reported annually to the Public Employee Retirement Administration Commission by the Peabody Contributory Retirement System.
- Dependents:** 80% of all members will be survived by a spouse. Age assumption for spouses is that males are assumed to be three years older than females.
- Administrative Expenses:** The anticipated administrative expenses for the fiscal year. For Fiscal Year 2011, the administrative expenses were assumed to be \$200,000.

Section IX - Demographic Information

Active Members by Age and Years of Service as of January 1, 2010

Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 20	-	-	-	-	-	-	-	-	-	0
	-	-	-	-	-	-	-	-	-	0
20-24	7	-	-	-	-	-	-	-	-	7
	25,157	-	-	-	-	-	-	-	-	25,157
25 to 29	39	6	-	-	-	-	-	-	-	45
	38,097	42,047	-	-	-	-	-	-	-	38,624
30 to 34	21	17	5	-	-	-	-	-	-	43
	41,998	47,721	65,679	-	-	-	-	-	-	47,014
35 to 39	17	20	23	7	-	-	-	-	-	67
	48,353	46,634	62,927	59,150	-	-	-	-	-	53,971
40 to 44	25	19	25	17	12	-	-	-	-	98
	37,449	43,317	59,866	64,887	60,241	-	-	-	-	51,856
45 to 49	38	34	27	26	26	8	-	1	-	160
	32,574	29,829	50,533	65,981	67,225	77,605	-	78,962	-	48,622
50 to 54	28	45	7	17	29	20	9	-	-	155
	37,882	33,364	41,309	59,175	57,426	65,730	64,423	-	-	47,851
55 to 59	20	32	21	9	22	12	7	6	2	131
	39,656	27,494	38,635	39,111	43,741	62,302	77,823	82,398	58,896	43,535
60 to 64	9	23	11	8	13	3	1	11	2	81
	32,112	27,780	48,583	47,431	39,402	79,144	51,641	91,457	77,922	46,975
65 to 69	4	5	6	3	5	2	1	-	-	26
	28,814	30,353	51,234	25,753	39,338	75,238	60,007	-	-	40,725
70 & up	1	4	-	-	8	-	-	2	1	16
	47,988	19,686	-	-	41,901	-	-	26,322	41,210	34,737
Total	209	205	125	87	115	45	18	20	5	829
Average Salary	37,540	34,556	52,633	58,015	53,413	68,244	68,679	81,601	62,969	46,988

Average Salary is based on prior calendar year salaries.

Average Age:

49.1

Average Service:

12.5

Section IX - Demographic Information

Retired Plan Participants and Beneficiaries Annual Pensions as of January 1, 2010

Attained Age	Male		Female		Total	
	Count	Total Payments	Count	Total Payments	Count	Total Payments
<20	0	0	1	27,249	1	27,249
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	1	7,250	1	7,250
45-49	0	0	0	0	0	0
50-54	4	158,287	2	18,121	6	176,408
55-59	20	604,582	16	246,124	36	850,706
60-64	35	1,258,489	30	373,165	65	1,631,654
65-69	57	1,746,041	54	705,999	111	2,452,039
70-74	44	1,252,825	71	917,141	115	2,169,966
75-79	53	1,132,053	69	741,375	122	1,873,429
80-84	36	725,305	106	1,165,275	142	1,890,580
85-89	25	329,058	55	566,513	80	895,571
90-94	6	85,327	11	86,250	17	171,577
95+	0	0	0	0	0	0
Total	280	7,291,966	416	4,854,463	696	12,146,429
Average Age	72.9		76.1		74.8	
Average Payment		26,043		11,669		17,452
	40.2%	60.0%	59.8%	40.0%	100.0%	100.0%

*Section IX - Demographic Information*

**Disabled Retired Plan Participants Annual Pensions as of January 1, 2010**

Attained Age	Male		Female		Total	
	Count	Total Payments	Count	Total Payments	Count	Total Payments
<20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	1	42,534	0	0	1	42,534
40-44	0	0	0	0	0	0
45-49	2	61,897	0	0	2	61,897
50-54	4	100,976	0	0	4	100,976
55-59	6	201,645	1	12,198	7	213,843
60-64	11	352,399	3	59,271	14	411,670
65-69	11	225,691	1	7,512	12	233,203
70-74	9	249,177	3	42,349	12	291,526
75-79	10	264,616	0	0	10	264,616
80-84	9	220,509	2	23,468	11	243,977
85-89	4	80,612	5	53,263	9	133,876
90-94	0	0	1	15,069	1	15,069
95+	0	0	0	0	0	0
Total	67	1,800,056	16	213,131	83	2,013,187
Average Age	69.3		75.9		70.5	
Average Payment		26,867		13,321		24,255
	80.7%	89.4%	19.3%	10.6%	100.0%	100.0%

*Section X - Glossary of Terms*

**Actuarial Accrued Liability** – That portion of the Actuarial Present Value of pension plan benefits which is not provided by future Normal Costs or employee contributions. It is the portion of the Actuarial Present Value attributable to service rendered as of the Valuation Date.

**Actuarial Assumptions** – Assumptions, based upon past experience or standard tables, used to predict the occurrence of future events affecting the commencement, amount and duration of pension benefits, such as: changes in compensation, mortality, withdrawal, disablement and retirement; rates of investment earnings and asset appreciation or depreciation; and any other relevant items.

**Actuarial Cost Method (or Funding Method)** – A procedure for allocating the Actuarial Present Value of all past and future pension plan benefits to the current year (Normal Cost) and the past (Actuarial Accrued Liability).

**Actuarial Gain or Loss (or Experience Gain or Loss)** – A measure of the difference between actual experience and that expected based upon the set of Actuarial Assumptions, during the period between the valuation date and the most recent immediately preceding valuation date.

**Note:** The effect on the Accrued Liability and/or the Normal Cost resulting from changes in the Actuarial Assumptions, the Actuarial Cost Method or Plan provisions would be described as such, not as an Actuarial Gain (Loss).

**Actuarial Present Value** – The dollar value on the valuation date of all benefits expected to be paid to current members based upon the Actuarial Assumptions and the terms of the Plan.

**Amortization Payment** – That portion of the pension plan appropriation which represents payments made to pay interest on and the reduction of the Unfunded Accrued Liability.

**Annual Required Contribution (ARC)** – The employer's periodic required contributions to a defined benefit pension plan, calculated in accordance with the rules required by the Governmental Accounting Standards Board (GASB).

**Annual Statement** – The statement submitted by the local retirement board to PERAC each year that describes the asset holdings and Fund balances as of December 31 and the transactions during the calendar year that affected the financial condition of the retirement system.

**Annuity Reserve Fund** – The fund into which total accumulated Member Contributions, including interest, is transferred at the time a member retires, and from which annuity payments are made.

**Annuity Savings Fund** – The fund in which Member Contributions plus interest credited are held for active members and for former members who have not withdrawn their contributions and are not yet receiving a benefit (inactive members).

**Assets** – The total value of the investments held by the Plan trust that are for the payment of promised benefits.

*Section X - Glossary of Terms*

**Cost of Benefits** – The estimated payment from the pension system for benefits for the fiscal year.

**Expense Fund** – The fund into which the appropriation for administrative expenses is paid and from which all such expenses are paid.

**Funded Ratio** – The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

**Funding Schedule** – The schedule based upon the most recently approved actuarial valuation which sets forth the amount which would be appropriated to the pension system in accordance with Section 22D of M.G.L. Chapter 32.

**GASB** – Governmental Accounting Standards Board.

**Normal Cost** – Total Normal Cost is that portion of the Actuarial Present Value of pension plan benefits which is expected to accrue in the current fiscal year. The Employee Normal Cost is the amount of the expected Member Contributions for the current fiscal year. The Employer Normal Cost is the difference between the Total Normal Cost and the Employee Normal Cost.

**Pension Benefit Obligation** – The portion of the Actuarial Present Value attributable to past service in accordance with the Projected Unit Credit cost method as stipulated by GASB Statement Number 5 (GASB 5). GASB 5 has been superseded by GASB Statements Number 25 and 27.

**Pension Fund** – The fund into which appropriation amounts as determined by PERAC are paid and from which pension benefits are paid.

**Pension Reserve Fund** – The fund which shall be credited with all amounts set aside by a system for the purpose of establishing a reserve to meet future pension liabilities. These amounts would include excess interest earnings.

**Present Value of Future Benefits** – The actuarial present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value of money and the probabilities of payment.

**Special Fund for Military Service Credit** – The fund which is credited with amounts paid by the retirement board equal to the amount which would have been contributed by a member during a military leave of absence as if the member had remained in active service of the retirement board. In the event of retirement or a non-job related death, such amount is transferred to the Annuity Reserve Fund. In the event of termination prior to retirement or death, such amount shall be transferred to the Pension Fund.

**Unfunded Actuarial Accrued Liability** – The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.

Section XI - Unit Allocation

Membership Data

Unit	City	Light	Housing Authority	Water	Sewer	Hospital	Brooksby Farm	Skating Rink	Golf Course	Total
<b>Summary of Member Data</b>										
Active Members	696	74	17	24	5	0	4	4	5	829
Average Age	49.1	49.6	50.7	50.6	45.5	0.0	44.0	43.3	50.9	49.1
Average Service	12.3	12.2	22.4	14.0	7.3	0.0	11.7	7.6	7.8	12.5
Total Valuation Salary	32,650,228	4,503,613	927,740	1,212,988	232,482	-	161,973	136,018	296,487	40,121,529
Average Valuation Salary	46,911	60,860	54,573	50,541	46,496	-	40,493	34,004	59,297	48,398
Retired Members and Beneficiaries	475	69	7	23	7	113	-	2	-	696
Average Age	74.7	72.4	75.2	77.0	72.8	76.5	-	66.3	-	74.8
Total Annual Pension	8,291,795	1,993,327	135,371	306,900	153,691	1,241,603	-	23,741	-	12,146,429
Average Annual Pension	17,456	28,889	19,339	13,343	21,956	10,988	-	11,870	-	17,452
Disabled Members	56	6	2	10	2	7	-	-	-	83
Average Age	70.8	64.9	50.2	74.3	63.1	75.6	-	-	-	70.5
Total Annual Pension	1,427,058	239,346	60,174	171,140	21,231	94,239	-	-	-	2,013,187
Average Annual Pension	25,483	39,891	30,087	17,114	10,615	13,463	-	-	-	24,255
Inactive Members	82	5	-	-	-	2	-	-	-	89
Annuity Savings Fund	659,436	101,212	-	-	-	28,144	-	-	-	788,792

**Section XI - Unit Allocation**

**Valuation Results**

Unit	City	Light	Housing Authority	Water	Sewer	Hospital	Brooksby Farm	Skating Rink	Golf Course	Total
<b>Actuarial Accrued Liability (AAL)</b>	160,444,221	29,699,685	4,983,327	6,275,140	1,645,297	10,161,468	115,776	459,228	397,035	214,181,178
<b>Assets</b>										
Market Value of Assets	71,841,441	13,298,505	2,231,364	2,809,793	736,708	4,549,958	51,841	205,627	177,779	95,903,016
Actuarial Value of Assets	86,209,730	15,958,205	2,677,636	3,371,752	884,050	5,459,950	62,209	246,752	213,335	115,083,619
<b>Unfunded Accrued Liability (Surplus)</b>	74,234,491	13,741,480	2,305,691	2,903,388	761,247	4,701,518	53,567	212,476	183,700	99,097,559
<b>Funded Status</b>	53.7%	53.7%	53.7%	53.7%	53.7%	53.7%	53.7%	53.7%	53.7%	53.7%
<b>Normal Cost, January 1</b>										
Employer	974,630	89,899	(17,872)	1,816	1,955	-	(1,504)	843	4,306	1,054,073
Employee	2,518,674	373,877	68,420	90,321	19,822	-	17,970	10,770	25,521	3,125,375
Administrative Expenses	149,821	27,733	4,653	5,860	1,536	9,489	108	429	371	200,000
Total Normal Cost	3,643,125	491,509	55,201	97,997	23,313	9,489	16,574	12,042	30,198	4,379,448
<b>Amortization, January 1</b>										
UAL, excluding ERI	5,043,798	933,653	156,658	197,268	51,722	319,440	3,640	14,436	12,481	6,733,096
ERI	70,395	27,217	7,230	4,574	9,848	0	0	0	0	119,264
Total	5,114,193	960,870	163,888	201,842	61,570	319,440	3,640	14,436	12,481	6,852,360
<b>Total Employer Cost, January 1</b>	6,238,644	1,078,502	150,669	209,518	65,061	328,929	2,244	15,708	17,158	8,106,433
<b>Appropriations</b>										
Fiscal 2011 Cost	6,685,102	1,155,683	161,451	224,512	69,717	352,468	2,405	16,832	18,386	8,686,556
Fiscal 2012 Cost	6,899,946	1,192,824	166,640	231,727	71,958	363,796	2,482	17,373	18,977	8,965,723
Fiscal 2013 Cost	7,121,033	1,231,045	171,980	239,152	74,263	375,453	2,561	17,930	19,585	9,253,002
Fiscal 2014 Cost	7,426,898	1,283,921	179,366	249,424	77,453	391,579	2,671	18,700	20,426	9,650,438